Original article

Faculty of Health Sciences Students' Views and Preferences on Organic Foods

Elem Kocaçal[1], Reyhan İrkin[2], Özüm Erkin Geyiktepe[3], Gülbin Konakçı[4]

[1]İzmir Demokrasi University, Faculty of Health Sciences, Department of Fundamentals of Nursing, İzmir, Turkey; [2]İzmir Demokrasi University, Faculty of Health Sciences, Nutrition and Dietetics Department, İzmir, Turkey; [3]İzmir Demokrasi University, Faculty of Health Sciences, Department of Public Health Nursing, İzmir, Turkey; [4]İzmir Demokrasi University, Faculty of Health Sciences, Department of Internal Medicine Nursing, İzmir, Turkey

Abstract. Objectives: To determine the faculty of health sciences students' opinions and preferences regarding organic foods. Material and Methods: This descriptive study was conducted at Faculty of Health Sciences in a Turkish University in 2020. The universe of the study consisted of 334 volunteer students. Data were collected using a self-administered questionnaire. Results: Of the students 40.4% of the participants indicated that they consumed organic foods every week. Although the department and class of the students within the scope of the study did not affect the preferences and opinions about organic foods in general ($p > 0.05$); the relationship between the department and the frequency of organic food consumption ($X^2 = 46.542$; $df = 12$; $p = 0.000$) and the status of reading labels on organic food packages ($X^2 = 10.114$; $df = 3$; $p = 0.018$) was found to be significant. Conclusion: The majority of university students consumed organic food and had an awareness about organic nutrition. In the future studies, in addition to the variables examined in this study, we recommend examining different student populations.

Key words: Health sciences, organic foods, students

Introduction

The organic food industry is a rapidly developing industry worldwide. Organic agriculture, which is one of the effective ways to reach safe food, has been started in Turkey at the beginning of 1985 by a small group. Over time, it has spread to a wider audience and has become an important market (1-4).

Organic foods have been increasingly sold in sales points in parallel with the natural nutrition trend in developed and developing countries. When the literature is reviewed, it can be seen that the continents that allocate the largest area to organic agriculture are Australia (12.2 million ha) and Europe (9.3 million ha). It is also indicated that organic foods are frequently consumed especially in developed countries (5-7).

Background

Organic agriculture includes biological and mechanical (machine-made) applications related to crops (cultural) and supports the recycling of on-farm agricultural products. It is of great importance for the protection of ecological balance and biological diversity.

With the increase in knowledge on organic agriculture, organic food and products, consumers' awareness of food choices and contribution to nature has also increased. The view that organic foods are healthier, safer, and tastier, as well as more beneficial to the environment, has become popular among consumers (5,8). Genetically modified seeds, chemical food additives, pesticides, chemical fertilizers, and irradiation to extend the shelf life of the products and ensure

their hygiene can compromise health (9,10). The consumption of processed foods containing preservatives, sweeteners, colourants, and additives causes cardiovascular diseases, diabetes, some types of cancer, obesity, and some hereditary diseases all over the world. This has led to an increasing tendency to consume organic foods that are healthier and safer in recent years (11). Since organic foods are sold at a higher price than conventional foods including additives, sweeteners, and adhesives, they are preferred more by the higher socioeconomic level consumers (3,5).

Cardello (1995) defined food quality as a perceptual and evaluative structure, which depends on factors such as purchaser, location, and purchasing status (12). However, consumers, generally tend to believe that organic foods are of higher quality than those traditionally grown. Consistently, Roddy et al. (1994) determined that Irish consumers consider organic foods as safer, healthier, nutritious, more delicious, and environmentally friendly than traditional foods (11).

Healthcare professionals work also on weekends, holidays, and variable shifts, and their profession is continuous. Multiple studies reveal that healthcare professionals encounter many stressors while performing their roles, and these stressors affect their ability to maintain healthy lifestyle behaviors, including physical activity and nutrition. In addition, most healthcare professionals do not have time to prepare healthy food due to long working hours and extreme fatigue. As a result, obesity and related health problems may arise, and disruptions and early quits while performing professional roles may occur. Poor health behaviors can affect the credibility of their role in health promotion as well as professional performance.

Healthcare professionals have a vital role in the delivery of healthcare services and are also important role models for healthy and sick individuals. Therefore, it is important to determine the dietary habits having a significant impact on health in healthcare professionals. To investigate nutritional habits and gain healthy eating habits, especially during the undergraduate study years is of great importance in terms of being good role models in professional life of students (7,9).

In a study conducted in Sweden, it was determined that organic foods are more accepted among individuals who have bachelor's degree and are young (13). Today's students will constitute future societies that can benefit more from organic foods and organic markets. As the consumers of tomorrow are today's young adults, policies to increase organic food consumption should be regulated to meet the needs of this group.

As a result of a study conducted with university students in Ghana, it was found that 83.9% of the students (n=348) were aware of organic agriculture, and 90.8% preferred organic foods to conventional products. The most significant reason for their preferences was determined as they think organic foods are healthier (8).

When the literature is reviewed; there are national and international studies on the nutritional habits of healthcare professionals or students (14-16). Besides, studies examining the opinions and preferences of health students on organic nutrition, which has become a rapid trend in recent years, is limited. This study aims to determine the faculty of health sciences students' opinions and preferences regarding organic foods.

Materials and Methods

This descriptive and cross-sectional study was carried out at Faculty of Health Sciences in a Western Turkish university between February and September 2020.

Setting and Sample

The universe of the study consisted of 500 volunteer first and second-year students who were studying in Nursing, Nutrition and Dietetics, Physiotherapy and Rehabilitation, and Sports Sciences Departments. Since the universe of the study also constitutes the sample, no sample calculation was made. Students who did not agree to participate were excluded from the study. Because the participating university was established in 2018, the students who are currently studying consist of first and second years.

Data Instruments

Data were collected using a self-administered questionnaire prepared by the researchers in line with a comprehensive literature review (4,6,8,13,14,17) and finalized by obtaining expert opinion (5 academics, 3 clinicians).

The questionnaire used to collect research data consists of 17 questions prepared in line with the literature. The questionnaire includes questions about students' demographic information (age, gender, educational background, socio-economic status of the family, etc.) and their opinions and preferences about organic nutrition.

Data Collection

After obtaining ethical approval, volunteer students were informed about the research. The self-administered questionnaire was applied face to face under the supervision of one of the researchers in one classroom. By filling the questionnaire at the same time and place, it was ensured that the students were not affected by each other. Filling out the questionnaire takes an average of 10 minutes for a student.

Data Analysis

The data obtained from the study were analyzed using the SPSS 20.0 (Statistical Package for the Social Sciences) (Chicago, IL) program. The number and percentage distribution of the students' introductory characteristics and the answers about their opinions and preferences on organic nutrition were given in tables. The relationship between demographic data and organic nutrition preferences and opinions was analyzed using the Chi-square test.

Ethical Considerations

The ethical approval (23.01.2020 dated, 2019/06-01 numbered) was obtained from the ethical committee of the university. The study was carried out in compliance with the Helsinki Declaration Principles. The participants were interviewed face to face to inform about the study, and to get their informed consent before data collection.

Results

Demographic Characteristics

Among the 500 students, 334 of them participated in the research, and the participation rate was 66.8%. The mean age of the students was 19.65 + 1.43 (min = 18; max = 36); 72.5% of them were female students and 69.8% were Anatolian high school graduates. It was determined that 35.6% of the students were in the nursing department, 26.3% were in the physiotherapy and rehabilitation department, and 66.2% were second-year students. The vast majority of the students (94.6%) did not have a special diet (Table 1).

Views and Preferences of the Students on Organic Foods

Of the students 40.4% of the participants indicated that they consumed organic foods every week, and 25.4% every day. Among the students who consumed organic food, 40.1% of them reported that they bought organic foods from markets where non-organic foods were also sold. To the question "How important is consuming organic foods for you?", 21% of the students stated that they gave importance in the third place, and 17.1% in the first place. As organic food, 85.3% of the students reported consuming fruits and vegetables, 71.3% of them reported consuming milk and dairy products. In the study, 36.2% of the students stated that approximately 25-50% of the foods they consumed during a week were organic foods. Of the students 77.5% stated that they obtained information on organic foods from the internet, and 64.9% read the label on the organic food packages (Table 2).

The meaning of the statement "Consuming organic foods instead of other kind of foods" was "healthier food" for 76% of the students, and "more natural food" for 60.5%. Of the participants, 77.2% stated that the price primarily affected the decision to buy organic foods, and 50% reported that their health benefits were the first important influencing factor. The reason for not buying organic foods was finding

them expensive for 71.9% of the students (Table 3).

Among the students, 84.4% of them reported that fermented products were organic foods, 34.7% thought that foods such as eggs, chicken meat, and milk sold organically were safe if packaged. Of the participants, 55.7% stated that they did not trust honey sold as organic. To the question "What do you pay attention to while consuming organic foods?" 59% of them indicated that they consumed raw vegetables and fruits after washing them, 51.2% consume organic eggs by cooking.

Relationship Between Demographic Characteristics and Views and Preferences of the Students on Organic Foods

Although the department and class of the students within the scope of the study did not affect the preferences and opinions about organic foods in general ($p>0.05$); the relationship between the department

Table 1. Defining characteristics of the students

Socio-demographic Characteristics	**n**	**(%)**
Age Mean + SD* (Min-max)	**19.65 + 1.43 (18-36)**	
Gender		
Female	242	72.5
Male	92	27.5
Department		
Nutrition and Dietetics	78	23.4
Nursing	119	35.6
Physiotherapy	88	26.3
Sports Sciences	49	14.7
Grade		
First grade	113	33.8
Second grade	221	66.2
Type of High School Graduated		
Health Vocational High School	9	2.7
Standard Public High School	4	1.2
Anatolian High School	233	69.8
Science High School	44	13.2
Other High Schools	44	13.2
Special Diet		
Vegetarian / vegan	4	1.2
Diabetic diet	1	0.3
Gluten-free diet	2	0.6
Salt-free diet	11	3.3
No diet	316	94.6

** SD= Standard Deviation*

Table 2. Students' preferences regarding organic food consumption

	n	**(%)**
Organic Food Consumption		
Yes	313	93.7
No	21	6.3
Frequency of Consumption of Organic Foods		
Daily	85	25.4
Weekly	135	40.4
Monthly	74	22.2
Every 6 months	22	6.6
Yearly	18	5.4
Procurement Way of Organic Foods		
Organic markets	95	28.4
Markets where non-organic foods are also sold	81	24.3
Supermarkets where only organic foods are sold	9	2.7
Supermarkets where non-organic foods are also sold	134	40.1
Dairy farms where farm products are sold	48	14.4
Village, farm, etc. organic farming and animal breeding places	85	25.4
Themselves or their family's organic farming	68	20.4
Own cattle / ovine / poultry feeding	19	5.7
Importance of Organic Food Consumption (Between 1-10)		
First place (very important)	57	17.1
Second place	28	8.4
Third place	70	21
Types of Consumed Organic Foods		
Fruits and vegetables	285	85.3
Meat	171	51.2
Poultry	168	50.3
Milk and milk products	238	71.3
Grain products	155	46.4
Egg	233	69.8
Processed foods	130	38.9
All	94	28.1
Organic Food Rate of Food Consumed During a Week		
< %25	112	33.5
%25-50	121	36.2
%50-75	66	19.8
%75-100	21	6.3
Reading the Label of Organic Food Packages		
Yes	222	66.5
No	112	33.5
The Source of Information on Organic Foods		
Television - Radio	161	48.2
Newspaper	25	7.5
Scientific Publications	120	35.9
Internet	259	77.5

Table 3: Students' opinions on organic foods

Questions*	**n**	**%**
What does it mean to you to consume organic foods instead of other foods?		
More expensive food	87	26
Chemical-free food	126	37.7
Antibiotics and hormones free meat/poultry	96	28.7
Healthier food	254	76
More delicious food	104	31.1
Better looking food	10	3
Environmentally friendly food	88	26.3
More natural food	202	60.5
Safer food	179	53.6
All of the above	36	10.8
What affects your decision to buy organic for some foods?		
Health benefits	167	50
Price	258	77.2
Product availability	31	9.3
GMO**-free	12	3.6
Supporting sustainable organic agriculture	11	3.3
Visual and audio media	12	3.6
If you do not buy organic food, what are the reason(s) for this?		
Expensive	240	71.9
It is smaller in size.	25	7.5
They have a more damaged appearance.	9	2.7
I think it's less tasty.	18	5.4
It does not have a positive effect on my perceived health.	11	3.3
I don't believe it's organic	81	24.3
There are no organic foods in the markets around me.	76	22.8
Do you think fermented products are organic?		
Yes	282	84.4
No	52	15.6
What are your opinions on sold organic foods such as eggs, chicken meat, milk, and dairy products?		
I do not trust those sold in the market place.	63	18.9
I trust it if it's packed.	116	34.7
I don't trust any of them.	157	47
I trust them all.	24	7.2
What is your opinion on organic honey?		
I do not trust those sold in the market place.	39	11.7
I trust it if it's packed.	87	26
I don't trust any of them.	186	55.7
I trust them all.	30	9
What do you pay attention to while consuming organic foods?		
I boil the milk before consuming it.	125	37.4
I cook the egg and consume it.	171	51.2
I consume raw vegetables and fruits after washing them.	197	59
I do not do any of them to prevent them from losing their organic properties.	13	3.9

** Some questions contain more than one answer.; ** GMO= Genetically modified organisms*

and the frequency of organic food consumption ($\chi 2$ = 46.542; df = 12; p = 0.000) and the status of reading labels on organic food packages ($\chi 2$ = 10.114; df = 3; p = 0.018) was found to be significant.

Discussion and Conclusion

In this study, which was conducted to determine the faculty of health sciences students' opinions and preferences on organic foods, it was found that the majority of the students (93.7%) consumed organic foods. This high rate may be due to the fact that students' departments was related to health sciences. The organic food purchase rate of students was found to be 42.4% in a study conducted in Brazil and 77.26% in the University of Florida (14,18). According to the studies examining the consumption rate of organic foods, it was determined that 46% of students in Turkey, 65% of students in Iran, and 85% of students in the United States consumed organic foods (19-21). It is observed that students' purchasing or consumption rates of organic foods varied. This diversity is thought to stem from the differences in both study methods and in the socio-demographic and cultural characteristics of the sample.

In the current study, students stated that they consumed organic foods the most weekly (40.4%). Similarly, İçli (2016) determined that the frequency of organic food consumption was mostly on weekly basis (15). This high rate is thought to be since the street markets, a reflection of cultural characteristics in Turkey, are the most preferred place for food supply and are established once a week.

In this study, it was determined that the places where organic foods were mostly supplied were supermarkets in which non-organic foods are also sold (40.1%), organic markets (28.4%), and organic farming places and animal farms (25.4%). In the study of Merdan (2018), it was stated that the students mostly met their organic product needs from villages and markets (55.8%) and organic product supermarkets (26%) (22). In their study, supplying organic products from the villages at a higher rate compared to ours can be explained by the settlement features and social habits.

In this sense, it is stated in the literature that "reflecting the culture" is an important source of motivation in organic food consumption (23).

We determined that the most consumed organic foods were fruits and vegetables (85.3%), milk and dairy products (71.3%), and eggs (69.8%). In a Turkish study, it was found that fruits and vegetables, milk and dairy products, organic meat, and eggs are the most consumed organic foods (24). In another study conducted in the United States, it was identified that students preferred organic ones in vegetables, meat, eggs, and dairy products (16). These findings are in parallel with our study.

The participants in our study mentioned that consuming organic foods meant "healthier" (76%), "more natural" (60.5%), and "more reliable" (53.6%) food. Osei (2013) reported that university students thought organic foods were "healthier", as well (8). In another study in the United States (n = 80), most university students were found to consume organic food (85%). Additionally, students indicated that organic foods were "healthier" and "more delicious" (21). These studies support our research findings. However, Mondelaers (2009) states that health and environmental motivation are the most important factors in organic food consumption (25). In our study, the idea of environmentally friendly food was determined as one of the less effective factors (26.3%) in purchasing organic products. It is thought that this difference arises from the differences in students' personal, socio-demographic and cultural characteristics, as well as their perspectives.

In the study of Dahm et al. (2009), it was found that young people were more likely to recognize and express an organic label and developed positive attitudes towards organic foods (26). The higher rate (66.5%) of the students reading the label of the organic food we obtained in our study is consistent with this finding.

In the current study, we found that the price of organic products (77.2%) and the health benefits (50%) of these products were the most effective determinators in the decision to buy organic foods. On the other hand, the reasons for not purchasing organic foods were stated as finding these products expensive (71.9%), not believing that they were organic (24.3%), and not being able to find organic foods in the surrounding markets (22.8%). In another study conducted on students' perceptions of organic food, it was stated that the main reasons for purchasing were the health benefits of organic products and the way of production (16). In the study of İnci (2014) (n = 392), the factors affecting the buying behavior of organic foods, in order of importance, were stated as trustworthiness, nutritional value, and health benefits (1). Similar to our findings, "price" and "accessibility" were determined as the main reasons for not choosing organic foods in the other studies (3,4,16). For students who continue their education with financial support such as tuition scholarships and loans, it is not surprising that the main reason stated as an obstacle to purchasing organic foods by students is cost and accessibility. Therefore, it can be considered as a limitation that students' financial situation is not included in the study.

In this study, it was demonstrated that approximately 80% of the students obtained information about organic foods from the internet. This is thought to be a reflection of rapid progress in today's information technologies (27). In parallel with our findings, the internet, and social media were determined as the most used information source in other studies (4,21).

Conclusion

In the present study, we revealed that the majority of university students consumed organic food and had an awareness about organic nutrition. In addition, it was demonstrated that the most preferred organic foods were vegetables, fruits, eggs, and dairy products. While the price was determined to be the main deterrent to purchasing organic foods, health benefits, contribution to the environment, and taste were determined as causes of purchasing organic products.

Nowadays, in parallel with the increase in health awareness, interest in organic products has also increased. It is necessary to raise the awareness of students about organic products while they are young, in order to develop healthy living behaviors. In this context, it would be beneficial to include courses related

to healthy nutrition in the curriculum of university education. It is also significant to enhance awareness among students that not all packaged products are organic and safely produced.

In the future studies, in addition to the variables examined in this study, we recommend to examine various student populations with different variables such as income level related to purchasing power, effects of consuming organic foods on health, and opinions and suggestions in organic food marketing.

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Correspondence:
Elem Kocaçal, PhD, RN, Assoc. Prof.,
İzmir Demokrasi University, Faculty of Health Sciences, Department of Nursing, Üçkuyular District,
Gürsel Aksel St., No:14, 35140
Karabağlar/İzmir /Turkey
Phone: +90 232 2601001/403 / +905058522426
E-mail: elem.kocacal@idu.edu.tr, elem.kocacal@hotmail.com